Generation of internal waves by tidal flow over three-dimensional topography

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While the previous studies focus on the energy conversion rate, we perform experiments and simulations to examine the generation regions and flow fields in detail. In particular, we present results from numerical simulations of oscillatory flow past supercritical, 3-dimensional topography (a half-sphere on a flat plane). These results are compared to experiments performed on similar topography. In contrast to the 2D case, where all flow is forced to go over the topography, the 3D case has the added complexity that the oscillating flow can either go over or around the topography. We characterize the boundary layer near the topography, and show how regions containing large vertical motion lead to the observed angular dependence of the wave field.

\textsuperscript{1}P. Holloway, M. Merrifield, J. Geophys. Res. \textbf{104}, 25,937 (1999)